DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Part 195

[Docket No. PS-144; Amdt. 195-65]

RIN 2137-AC 78

Risk-Based Alternative to Pressure Testing Older Hazardous Liquid and Carbon Dioxide Pipelines Rule

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Final rule.

SUMMARY: This final rule allows operators of older hazardous liquid and carbon dioxide pipelines to elect a risk-based alternative in lieu of the existing rule. The existing rule requires the hydrostatic pressure testing of certain older pipelines. The risk-based alternative would allow operators to elect an approach to evaluating the integrity of these lines that takes into account individual risk factors. This would allow operators to focus resources on higher risk pipelines and effect a greater reduction in the overall risk from pipeline accidents.

DATE: This final rule takes effect November 4, 1998.

FOR FURTHER INFORMATION CONTACT: Mike Israni, (202) 366-4571, or e-mail: mike.israni@rspa.dot.gov, regarding the subject matter of this final rule, or Dockets Unit (202) 366-4046, for copies of this final rule document or other material in the docket.

SUPPLEMENTARY INFORMATION:

Background

On June 7, 1994, RSPA published a final rule, "Pressure Testing Older Hazardous Liquid and Carbon Dioxide Pipelines," (Amdt. 195-51; 59 FR 29379) to ensure that certain older pipelines have an adequate safety margin between their maximum operating pressure and test pressure. This safety margin is to be provided by pressure testing according to part 195 standards or operation at 80 percent or less of a qualified prior test or operating pressure. The pipelines covered by the rule are steel interstate pipelines constructed before January 8, 1971, steel interstate offshore gathering lines constructed before August 1, 1977, or steel intrastate pipelines constructed before October 21, 1985, that transport hazardous liquids subject to part 195. Also covered are steel carbon dioxide pipelines constructed before July 12, 1991, subject to part 195.

On June 23, 1995, the American Petroleum Institute (API) filed a petition on behalf of many liquid pipeline operators that proposed a risk-based alternative to the required pressure testing rule. API indicated that its proposal would allow operators to focus resources on higher risk pipelines and to effect a greater reduction in the overall risk from pipeline accidents.

In order to determine whether the API proposal had merit, RSPA held a public meeting on March 25, 1996. On May 8 and November 7, 1996, and on May 17, 1997, RSPA briefed the Technical Hazardous Liquid Pipeline Safety Standards Committee (THLPSSC) on the API proposal and steps taken by RSPA to develop a proposed rule. As discussed in more detail below, RSPA finds considerable merit in a risk-based approach to pressure testing of older hazardous liquid pipelines. It provides accelerated testing of electric resistance welded (ERW) pipe, incorporates the use of new technology, and provides for continuing internal inspection of older pipelines through a pigging program. RSPA has been working actively with the pipeline industry to develop a risk management framework for pipeline regulations. The API proposal is consistent with the risk assessment and management approach to safety. The API proposal provides an opportunity to pilot a risk-based approach in a rulemaking forum. Accordingly, this final rule requires a risk-based alternative to the pressure testing rule that has been modeled after the API proposal.

RSPA has extended time for compliance with the pressure testing rule in order to allow completion of this final rule on a risk-based alternative. The deadline for complying with §195.302(c)(1) is extended to December 7, 1998. The deadline for complying with §195.302(c)(2)(i) is extended to December 7, 2000. The deadline for complying with §195.302(c)(2)(ii) is extended to December 7, 2003. (62 FR 54591; October 21, 1997).

Major Features of Risk-Based Alternative

The risk-based alternative to the rule requiring the pressure testing of older pipelines has six main features:

1. Highest Priority Is Given to the Highest Risk Facilities; Lowest Risk Facilities Are Excepted From Additional Measures

Pre-1970 electric resistance welded (ERW) and lapwelded pipelines susceptible to longitudinal seam failures exhibit the highest potential risk because of their combination of probability of failure and potential for larger volume releases as evidenced by historical records. Pressure testing is the only available technology for verifying the integrity of pre-1970 ERW and lapwelded pipelines, because it can detect the type of seam failures endemic to some ERW and all lapwelded pipe. This risk-based alternative requires accelerated testing of pre-1970 ERW and lapwelded pipe susceptible to longitudinal seam failure in certain locations (risk classification C and B) where people and environment might be significantly affected. However, in locations (risk classification A) where consequences to the public or environment are less significant, the risk-based alternative allows delayed testing for pre-1970 ERW and lapwelded pipe susceptible to longitudinal failure and allows the operator to determine the need for pressure testing of other types of pipe.

2. Consequence Factors Such as Location (Population and Environment), Product Type, and Release Potential Are Taken Into Consideration When Setting Testing Priorities

This risk-based alternative takes into account the most significant variables that may impact the severity of a release, i.e., location with respect to populated and environmentally sensitive[1] areas, the nature of the product transported, and the potential volume of product release. Historically, a very small percentage of re-

[1] "Environmentally sensitive areas" is not currently defined, but operators are encouraged to use their best judgment in applying this factor. This factor may be defined in future rulemaking.

leases adversely impacted public safety and environment. By taking these potential consequences into consideration in the timing of tests, an operator's resources will be more effectively applied to reduce risks.

3. Best Available Technology Is Applied To Verify Pipeline Integrity

The risk-based alternative encourages the use of the most effective means to ensure pipeline integrity. This rule utilizes the strength of two primary technologies—pressure testing and magnetic flux leakage/
ultrasonic internal inspection devices. Each technology provides testing advantages in particular circumstances. This rule allows the operator to evaluate the pipeline risk considerations and to choose the most appropriate technology.

4. Timing of Tests Is Based on Risk

Considering the probability and consequence factors, the risk-based rule increases the priority of a limited amount of pre-1970 ERW and all lapwelded pipelines and maintains the three-year timing for risk classification B and C lines which represent the highest risk to people and environment. Pipelines with lower risks (risk classification A) are allowed a longer testing schedule or are eliminated (non-high risk pre-
1970 ERW pipelines) from a mandatory testing requirement. Nothing in this rule precludes an operator from accelerating these schedules based on their pipeline operating and maintenance history.

5. Reduces Test Water Requirements

This rule would allow operators options that require less test water and generate less water requiring treatment.

6. Provides an Opportunity To Reduce Operating Costs and Maintain the Necessary Margins of Safety by Applying the Risk-Based Concept

Acceptance and implementation of this rule provides an opportunity to pilot a risk-based approach to regulation. OPS anticipates increased use of risk-based approaches in future rulemakings.

Proposed Rule

RSPA published an NPRM (63 FR 5918; February 5, 1998), proposing to add a new section to Part 195 entitled "Risk-based alternative to pressure testing." NPRM also proposed that existing §195.303 "Test pressure", and §195.304 "Testing of components" would be renumbered as §195.304 and §195.305 respectively. The comment period closed April 6, 1998. Commenters included an industry association, two pipeline operating companies and a safety consultant.

Advisory Committee Review

On May 6, 1998, RSPA submitted the proposed rule and regulatory evaluation to the Technical Hazardous Liquid Pipeline Safety Standards Committee (THLPSSC). Each proposed hazardous liquid pipeline safety standard must be submitted to the THLPSSC for Committee's view as to its technical feasibility, reasonableness, cost-effectiveness, and practicability. At the meeting, the THLPSSC declined to approve the proposed rule and unanimously requested that "environmentally sensitive areas" be included within the consequence factors for setting testing priorities. Some members argued that not including an environmental factor at this time would result in many segments of pipeline remaining untested for many more years. The Committee asked that the proposed rule be resubmitted for consideration through a mail ballot. On May 12, 1998, RSPA sent letter ballots to THLPSSC members to vote on revised language to be included in the final rule. RSPA received 10 of 12 ballots. All 10 members voted to approve the proposed rule provided the revised language was included. The THLPSSC also recommended discussion in the preamble to the final rule of the need to include consideration of environmentally sensitive areas even before a clear definition of the term is developed.

RSPA did not include an environmental factor in the proposed rule because of the lack of agreement on a definition. Following public briefings on the progress of the rulemaking at the THLPSSC meetings in November 1996 and May 1997, API objected to inclusion of an environmental factor as premature in light of the ongoing rulemaking to define unusually sensitive areas (USAs). At that time, RSPA intended to include an interim definition that could later be replaced, if appropriate, by the definition of USAs.

Although we do not necessarily agree that a definition of USAs should be the sole basis for inclusion of an environmental factor for a risk-based alternative to pressure testing, we recognized in the proposed rule the difficulties of defining an environmental factor before the USA definition is formulated. The difficulty in articulating a factor was made very apparent by THLPSSC members at the May 1997 meeting. One member argued that the environmental factor under consideration for the proposed rule was inadequate; two other members challenged that argument. Discussions with the members and API following that meeting indicated little chance of agreement on a definition prior to definition of USAs. Based on the discussion at the THLPSSC on May 6, 1998, it appears that there is broad agreement that environmentally sensitive areas will be considered by the industry even in the absence of a definition. Accordingly, we are following the advice of the THLPSSC and including environmentally sensitive areas within the consequence factors in this final rule. We recognize that we may need to revisit this issue once we have defined "unusually sensitive areas."

The Final Rule

The new §195.303 "Risk-based alternative to pressure testing" would allow an operator of older hazardous liquid and carbon dioxide pipeline to elect an approach to evaluating the integrity of lines that takes into account individual risk factors. This alternative establishes test priorities based on the inherent risk of a given pipeline segment. Each pipeline is assigned a risk classification based on several indicators. In assigning a risk classification to a given pipeline segment, the first step is to determine whether or not the segment contains pre-1970 ERW and lap-weld pipe susceptible to longitudinal seam failures. Certain pre-1970 ERW and lap-weld pipeline segments are susceptible to longitudinal seam failures. An operator must consider the seam-related leak history of the pipe and pipe manufacturing information as available, which may include the pipe steel's mechanical properties, including fracture toughness; the manufacturing process and controls related to seam properties, including whether the ERW process was high-frequency or low-frequency, whether

the weld seam was heat treated, whether the seam was inspected, the test pressure and duration during mill hydrotest; the quality control of the steel-making process; and other factors pertinent to seam properties and quality.

The next step is to determine the pipeline segment's proximity to populated and environmentally sensitive areas (Location). "Environmentally sensitive areas" is not currently defined. However, we expect operators to use their best judgment in applying this factor. Some good examples of areas which would be environmentally sensitive are waters used for drinking and fishing. This environmental factor may be defined in a future rulemaking.

The risk classification of a segment is also adjusted based on the pipeline failure history, the product transported, and the volume potentially releasable in a failure. Additional guidance for use of the alternative is provided in a new appendix B.

The pipeline failure history, denoted in the final rule as "Probability of Failure Indicator," is an important factor. The history of past failures (types of failures, number of failures, sizes of releases, etc.) plays an important role in determining the chances of future occurrences for a particular pipeline system. Therefore, it has been included as risk factor in the matrix for determining the risk classification. In the final rule the probability of failure indicator is considered "high risk" if the pipeline segment has experienced more than three failures in last 10 years due to time-dependent defects (due to corrosion, gouges, or problems developed during manufacture, construction or operation, etc.). Pipeline operators should make an appropriate investigation of spills to determine whether they are due to time-dependent defects. An operator's determination should be based on sound engineering judgment and be documented. In addition, the final rule provides compliance dates and recordkeeping requirements for those operators who elect the risk-based alternative to pressure testing of older hazardous liquid and carbon dioxide pipelines.

RSPA believes this rule will provide the pipeline industry with the flexibility to elect alternative technology for evaluating pipeline integrity without sacrificing safety.

Discussion of Comments

RSPA received four comments in response to the NPRM. Commenters included one industry association (API), two pipeline operating companies, and a safety consultant. Three commenters including API expressed strong support, but one commenter (a safety consultant) opposed issuing this risk-based rule.

Performance measures—In the proposed rule, RSPA sought comment and information on how to measure the performance of this risk-based alternative to determine effectiveness, particularly in comparison with the pressure test rule. RSPA received no comment. RSPA plans to examine the future performance of those pipeline segments that are pressure tested and compare it to the future performance of pipeline segments that are internally inspected or that are not tested at all.

Failure history—In the proposed rule, RSPA sought comment on excluding insignificant failures from the failure history risk factor. RSPA also sought comment on whether the failure should be quantified or if only a reportable incident should be considered.

One operator commented that only Department Of Transportation (DOT) reportable incidents be included. API commented that spills, regardless of whether reportable or not, should be included in the risk-based alternative engineering evaluation process by the operator making its own engineering judgment. The judgment should be documented and applied, when appropriate, to the failure history risk factor. API believes that proper documentation removes subjective judgments during agency audits/evaluations of the use of the risk-based alternative.

One commenter asked whether third party damage resulting in the immediate release of product would be considered a time-dependent defect in Table 6.

RSPA agrees that proper documentation would clarify the validity of decisions about whether spills are related to time-dependent defects or are truly insignificant during agency evaluation of the use of the risk-based alternative. This also eliminates need for failures to be quantified. Third party damage resulting in the immediate release of product does not constitute a time-dependent defect. Time-dependent defects are defects that result in spills due to corrosion, gouges, or problems developed during manufacture, construction or operation, etc. This is already covered in subnote 2 in Table 6 of Appendix B. Therefore, no changes have been made to Table 6.

Opposition to issuing the risk-based rule—One commenter (a safety consultant) opposed issuing this rule. Commenter argued that this rule might have been more meritorious had it been proposed after the results were in on the risk management demonstration projects. This commenter said that the notice published in the **Federal Register** on November 15, 1996 (61 FR 58605) states that the demonstration projects will test whether allowing operators the flexibility to allocate safety resources through risk management is an effective way to improve safety, environmental protection, and reliability. They will also provide data on how to administer risk management as a permanent feature of the Federal pipeline safety program if risk management proves to be viable regulation alternative. Therefore, this commenter said this rulemaking should be delayed until the completion of the risk management demonstration projects. This commenter also contended that the purpose of the API petition requesting the risk-based alternative was to reduce, or delay, the economic burden on pipeline companies as a result of the requirements of the final rule for pressure testing published by RSPA on June 7, 1994, (59 FR 29379).

RSPA disagrees that this rule should be delayed until completion of the risk management demonstration projects. The Accountable Pipeline Safety and Partnership Act of 1996 (Pub. L. 104-304, Oct. 12, 1996) that establishes the Risk Management Demonstration Program contemplates a limited number of projects. RSPA will approve no more than ten (10). Currently, none of projects being considered addresses the pressure testing of older pipelines that are impacted by the June 1994 pressure test rule. The Demonstration Program is looking at whole set of activities rather than focusing on an individual regulation. Also, delay until completion of the projects would unreasonably delay addressing issues of older hazardous liquid pipelines. These pipelines include high risk ERW pipelines.

The risk-based approach to older pipelines provides an opportunity to pilot a risk-based approach in a rulemaking forum as opposed to a demonstration project forum. RSPA believes this rule will provide the pipeline industry with the flexibility to elect alternative technology

for evaluating pipeline integrity without sacrificing safety.

Proposed §195.303(b)(4)(ii)—API suggested that this paragraph be revised to clarify that up to three time-dependent failures in 10 years would be low-risk. The proposed rule inadvertently limited the low risk assignation to two failures. This is inconsistent with the proposed Table 6. We agree and have revised this paragraph to be consistent with Table 6.

Proposed §195.303(c): API said that the last sentence in the text of §195.303(c) should be clarified so that operators understand that for those segments that fall under Risk Classification A "no additional measures" refers to no additional measures under this subpart (i.e. subpart E—Pressure Testing). API said that the last sentence as proposed appears to be broader. We have revised this section for clarity as recommended by the API.

Proposed §195.303(g): API said that the text of §195.303(g) should be clarified so that operators understand that pressure testing under the risk-based alternative, like the existing final rule, would be a one-time test. The review of risk classifications should be required only for those pipeline segments that have not yet been tested under §195.303(a) or §195.303(c). We agree and have clarified the wording.

Proposed §195.303(i): API said that requiring operators to give a written notification and get approval from the Administrator before discontinuing from this program, should be eliminated from this rulemaking. Adding that this section is confusing, contradictory and results in a different standard of care for the risk-based alternative compared with the existing final rule. API said that operators should have flexibility to elect test portions and change plans of their system using the existing final rule and portions of their systems under the risk based alternative. The intent of §195.303(i) requirement is to avoid operators switching from one testing program to another, causing delays in testing. Eliminating this requirement may make it difficult to enforce the regulatory deadlines. Requirements in this rule does not prevent an operator from choosing pressure testing for some segments and risk-based alternative for the remaining segments of a pipeline. Therefore, this section is retained.

Do previous in-line inspections on pipeline systems constitute compliance? API and one commenter requested that RSPA should allow previous in-line inspections and subsequent maintenance of a pipeline documented by company records as in compliance with this rule. RSPA will accept previous in-line inspections on pipeline conducted in the five years prior to the effective date of this final rule provided that anomalies found by previous smart pig runs have been repaired and pipeline has been maintained. RSPA will not accept older in-line inspections for the following reasons: (1) Technology keeps changing rapidly and internal inspection devices have greatly improved in recent years, (2) older internal inspection devices probably did not provide adequate data, (3) new corrosion or other defects may have developed since last in-line inspection.

Appendix B Table 1—API suggested that term "pipeline system" be changed to "pipeline segment" in Footnote 1 to Table 1, for clarity and agreement with the intent of the risk-based rule. We agree.

Additional Clarifying Guidance for both Operators and Inspectors—A number of operators (via API) offered suggestions for ways of making the rule more understandable, including rearranging the tables in the appendix, making the tables more explicit or providing flow charts that visually clarify the decision-making paths. RSPA realizes that a flowchart or decision tree with a couple of examples could aid the operators. However, the need to avoid further delay in addressing the issues of older hazardous liquid pipelines makes it impossible for RSPA to prepare such additional aids to implementation at this stage. Nothing precludes API with the help of its members from developing a flowchart and perhaps a few examples on how to apply this risk-based rule for its members.

V. Rulemaking Analyses

Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is a significant regulatory action under Executive Order 12866. Therefore, this rule was reviewed by the Office of Management and Budget. In addition, this final rule is significant under DOT's regulatory policies and procedures (44 FR 11034; February 26, 1979) because it is the first explicitly risk-based approach to rulemaking final by the Office of Pipeline Safety. A copy of the regulatory evaluation to this rule is also available in the docket office for review.

This section summarizes the conclusions of the regulatory evaluation. RSPA's pressure testing final rule was published on June 7, 1994 (59 FR 29379) along with a regulatory evaluation which found that the rule had a positive net benefit to the public, i.e., the benefits of the rule exceeded the cost (Present value costs of the earlier proposal were estimated to be between $134-$179 million in 1997 dollars while the present value benefits were estimated as $230-$283 million). RSPA believes that the risk-based alternative maintains the necessary margins of safety, therefore, the benefits of this alternative should be similar to the benefits of the earlier proposal. The present value costs for the risk-based alternative are estimated to be between $88.4-$98.4 million for reasons described below. The final rule allows the use of alternative technology (smart pigs) for evaluating pipeline integrity. On average smart pig testing is less expensive than pressure testing by $2,650/
mile. In some cases smart pig technology provides more information about pipeline anomalies than pressure testing. The risk-based alternative would reduce the total amount of test water, which should lower the waste treatment costs and generate less hazardous waste. The risk-based alternative would allow operators to forgo testing where pipelines have low operating pressures, transport non-volatile product, operate in rural and environmentally non-sensitive areas, and have good records on pipeline failure history.

This risk-based approach is an ongoing process. RSPA believes that the risk-based alternative maintains the necessary margins of safety for the public and environment. Moreover, RSPA concludes that this alternative has the potential for positive improvements for the environment while reducing operating costs by allowing operators to elect those test methods most appropriate to the circumstances of each pipeline.

Regulatory Flexibility Act

The regulatory flexibility analysis of the earlier final rule concluded that it would not have a significant impact on a substantial number of small entities. RSPA believes that because this regulation offers an alternative to operators that could reduce the less than significant impact of the earlier regulation even further,

this rule does not have a significant impact on a substantial number of small entities. Based on the facts available about the anticipated impact of this rulemaking action, I certify pursuant to Section 605 of the Regulatory Flexibility Act (5 U.S.C. 605) that the action will not have a significant economic impact on a substantial number of small entities.

RSPA, in the proposed rule, had requested comments from small entities which might be impacted by this rule. We received no comments. This supports our earlier conclusion that this rule will have no significant impact on a substantial number of small entities.

Executive Order 12612

This rule will not have substantial direct effect on states, on the relationship between the Federal Government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with E.O. 12612 (52 FR 41685; October 30, 1987), RSPA has determined that this final rule does not have sufficient federalism implications to warrant preparation of a Federalism Assessment.

Executive Order 13084

This rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13084 ("Consultation and Coordination with Indian Tribal Governments"). Because this rule would not significantly or uniquely affect the communities of the Indian tribal governments, the funding and consultation requirements of this Executive Order do not apply.

Unfunded Mandates

This rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of $100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector, and is the least burdensome alternative that achieves the objective of the rule.

Paperwork Reduction Act

This rule does not substantially modify the paperwork burden on pipeline operators. Under the current pressure testing regulations operators are required to have testing plans, schedules, and records. The risk-based alternative would require the same or equivalent plans, schedules, and records for either pressure testing or internal inspection. Therefore, there is no additional paperwork required. Operators who choose the risk-based alternative will be required to have records that the pipeline segment which is not being tested qualifies for the risk-based alternative. According to conversations between OPS and the pipeline industry some of this information is already available in the form of drawings or plans that can be found either in operators' Facility Response Plans required by the Oil Pollution Act of 1990 (OPA 90) or in emergency response plans required by RSPA.

Operators will be required to periodically review the pipelines that qualify for the risk-based alternative to ensure that they still qualify. OPS believes that operators can conduct this review as part of their normal procedures.

Because of the above analysis, OPS does not believe that operators will have any additional paperwork burden because of this alternative, and therefore no separate paperwork submission is required.

National Environmental Policy Act

RSPA has analyzed this action for purposes of the National Environmental Policy Act (42 U.S.C. 4321 et seq.) and has determined that this action would not significantly affect the quality of the human environment. An Environmental Assessment and a Finding of No Significant Impact are in the docket.

List of Subjects in 49 CFR Part 195

Anhydrous ammonia, Carbon dioxide, Petroleum, Pipeline safety, Reporting and recordkeeping requirements.

In consideration of the foregoing, RSPA amends part 195 of title 49 of the Code of Federal Regulations as follows:

PART 195—[AMENDED]

1. The authority citation for part 195 continues to read as follows:

Authority: 49 U.S.C. 60102, 60104, 60108, and 60109; and 49 CFR 1.53.

2. Section 195.302 is amended by adding a new paragraph (b)(4) to read as follows:

§195.302 General requirements.

* * * * *

(b) * * *

(4) Those portions of older hazardous liquid and carbon dioxide pipelines for which an operator has elected the risk-based alternative under §195.303 and which are not required to be tested based on the risk-based criteria.

* * * * *

3. Section 195.302(a) is amended by removing cross-reference "§195.304(b)" and adding cross-reference "§195.305(b)".

4. In paragraph (c) of §195.302, the introductory text is revised to read as follows:

§195.302 General requirements.

* * * * *

(c) Except for pipelines that transport HVL onshore, low-stress pipelines, and pipelines covered under §195.303, the following compliance deadlines apply to pipelines under paragraphs (b)(1) and (b)(2)(i) of this section that have not been pressure tested under this subpart:

* * * * *

§§195.303 and 195.304 [Redesignated as §§195.304 and 195.305]

5. Section 195.303 Test pressure. and §195.304 Testing of components. are redesignated as §195.304 Test pressure. and §195.305 Testing of components.

6. Part 195 is amended by adding a new §195.303 to read as follows:

§195.303 Risk-based alternative to pressure testing older hazardous liquid and carbon dioxide pipelines.

(a) An operator may elect to follow a program for testing a pipeline on risk-based criteria as an alternative to the pressure testing in §195.302(b)(1)(i)-(iii) and §195.302(b)(2)(i) of this subpart. Appendix B provides guidance on how this program will work. An operator electing such a program shall assign a risk classification to each pipeline segment according to the indicators described in paragraph (b) of this section as follows:

(1) Risk Classification A if the location indicator is ranked as low or medium risk, the product and volume indicators are ranked as low risk, and the probabil-

ity of failure indicator is ranked as low risk;

(2) Risk Classification C if the location indicator is ranked as high risk; or

(3) Risk Classification B.

(b) An operator shall evaluate each pipeline segment in the program according to the following indicators of risk:

(1) The location indicator is—

(i) High risk if an area is non-rural or environmentally sensitive[1]; or

(ii) Medium risk; or

(iii) Low risk if an area is not high or medium risk.

(2) The product indicator is[1]

(i) High risk if the product transported is highly toxic or is both highly volatile and flammable;

(ii) Medium risk if the product transported is flammable with a flashpoint of less than 100 deg. F, but not highly volatile; or

(iii) Low risk if the product transported is not high or medium risk.

(3) The volume indicator is—

(i) High risk if the line is at least 18 inches in nominal diameter;

(ii) Medium risk if the line is at least 10 inches, but less than 18 inches, in nominal diameter; or

(iii) Low risk if the line is not high or medium risk.

(4) The probability of failure indicator is—

(i) High risk if the segment has experienced more than three failures in the last 10 years due to time-dependent defects (e.g., corrosion, gouges, or problems developed during manufacture, construction or operation, etc.); or

(ii) Low risk if the segment has experienced three failures or less in the last 10 years due to time-dependent defects.

(c) The program under paragraph (a) of this section shall provide for pressure testing for a segment constructed of electric resistance-welded (ERW) pipe and lapwelded pipe manufactured prior to 1970 susceptible to longitudinal seam failures as determined through paragraph (d) of this section. The timing of such pressure test may be determined based on risk classifications discussed under paragraph (b) of this section. For other segments, the program may provide for use of a magnetic flux leakage or ultrasonic internal inspection survey as an alternative to pressure testing and, in the case of such segments in Risk Classification A, may provide for no additional measures under this subpart.

(d) All pre-1970 ERW pipe and lapwelded pipe is deemed susceptible to longitudinal seam failures unless an engineering analysis shows otherwise. In conducting an engineering analysis an operator must consider the seam-related leak history of the pipe and pipe manufacturing information as available, which may include the pipe steel's mechanical properties, including fracture toughness; the manufacturing process and controls related to seam properties, including whether the ERW process was high-frequency or low-frequency, whether the weld seam was heat treated, whether the seam was inspected, the test pressure and duration during mill hydrotest; the quality control of the steel-making process; and other factors pertinent to seam properties and quality.

(e) Pressure testing done under this section must be conducted in accordance with this subpart. Except for segments in Risk Classification B which are not constructed with pre-1970 ERW pipe, water must be the test medium.

(f) An operator electing to follow a program under paragraph (a) must develop plans that include the method of testing and a schedule for the testing by December 7, 1998. The compliance deadlines for completion of testing are as shown in the table below:

TABLE:—§195.303—TEST DEADLINES

Pipeline segment	Risk classification	Test deadline
Pre-1970 Pipe susceptible to longitudinal seam failures [defined in §195.303(c) & (d)]	C or B	12/7/2000
	A	12/7/2002
All Other Pipeline	C	12/7/2002
Segments.	B	12/7/2004
	A	Additional testing not required.

(g) An operator must review the risk classifications for those pipeline segments which have not yet been tested under paragraph (a) of this section or otherwise inspected under paragraph (c) of this section at intervals not to exceed 15 months. If the risk classification of an untested or uninspected segment changes, an operator must take appropriate action within two years, or establish the maximum operating pressure under §195.406(a)(5).

(h) An operator must maintain records establishing compliance with this section, including records verifying the risk classifications, the plans and schedule for testing, the conduct of the testing, and the review of the risk classifications.

(i) An operator may discontinue a program under this section only after written notification to the Administrator and approval, if needed, of a schedule for pressure testing.

§195.406 [Amended]

7. Section 195.406(a)(4) is amended by removing cross-reference "§195.304" and adding cross-reference "§195.305"

8. A new Appendix B is added to part 195 to read as follows:

Appendix B—Risk-Based Alternative to Pressure Testing Older Hazardous Liquid and Carbon Dioxide Pipelines

Risk-Based Alternative

This Appendix provides guidance on how a risk-based alternative to pressure testing older hazardous liquid and carbon dioxide pipelines rule allowed by §195.303 will work. This risk-based alternative establishes test priorities for older pipelines, not previously pressure tested, based on the inherent risk of a given pipeline segment. The first step is to determine the classification based on the type of pipe or on the pipeline segment's proximity to populated or environmentally sensitive area. Secondly, the classifications must be adjusted based on the pipeline failure history, product transported, and the release volume potential.

Tables 2-6 give definitions of risk classification A, B, and C facilities. For the purposes of this rule, pipeline segments containing high risk electric resistance-welded pipe (ERW pipe) and lapwelded pipe manufactured prior to 1970 and considered a risk classification C or B facility shall be treated as the top priority for testing because of the higher risk associated with the susceptibility of this pipe to longitudinal seam failures.

In all cases, operators shall annually, at intervals not to exceed 15 months, review their facilities to reassess the classification and shall take appropriate action within two years or operate the pipeline

[1] (See Appendix B, Table C).

[1] (See Appendix B, Table C).

system at a lower pressure. Pipeline failures, changes in the characteristics of the pipeline route, or changes in service should all trigger a reassessment of the originally classification.

Table 1 explains different levels of test requirements depending on the inherent risk of a given pipeline segment. The overall risk classification is determined based on the type of pipe involved, the facility's location, the product transported, the relative volume of flow and pipeline failure history as determined from Tables 2-6.

TABLE 1.—TEST REQUIREMENTS—MAINLINE SEGMENTS OUTSIDE OF TERMINALS, STATIONS, AND TANK FARMS

Pipeline segment	Risk classification	Test deadline[1]	Test medium
Pre-1970 Pipeline Segments susceptible to longitudinal seam failures[2]	C or B	12/7/2000	Water only.
	A	12/7/2002[3]	Water only.
All Other Pipeline Segments.	C	12/7/2002[3]	Water only.
	B	12/7/2004[4]	Water/Liq.[5]
	A	Additional pressure testing not required.	

[1] If operational experience indicates a history of past failures for a particular pipeline system, failure causes (time-dependent defects due to corrosion, construction, manufacture, or transmission problems, etc.) shall be reviewed in determining risk classification (See Table 6) and the timing of the pressure test should be accelerated.
[2] All pre-1970 ERW pipeline segments may not require testing. In determining which ERW pipeline segments should be included in this category, an operator must consider the seam-related leak history of the pipe and pipe manufacturing information as available, which may include the pipe steel's mechanical properties, including fracture toughness; the manufacturing process and controls related to seam properties, including whether the ERW process was high-frequency or low-frequency, whether the weld seam was heat treated, whether the seam was inspected, the test pressure and duration during mill hydrotest; the quality control of the steel-making process; and other factors pertinent to seam properties and quality.
[3] For those pipeline operators with extensive mileage of pre-1970 ERW pipe, any waiver requests for timing relief should be supported by an assessment of hazards in accordance with location, product, volume, and probability of failure considerations consistent with Tables 3, 4, 5, and 6.
[4] A magnetic flux leakage or ultrasonic internal inspection survey may be utilized as an alternative to pressure testing where leak history and operating experience do not indicate leaks caused by longitudinal cracks or seam failures.
[5] Pressure tests utilizing a hydrocarbon liquid may be conducted, but only with a liquid which does not vaporize rapidly.

Using LOCATION, PRODUCT, VOLUME, and FAILURE HISTORY "Indicators" from Tables 3, 4, 5, and 6 respectively, the overall risk classification of a given pipeline or pipeline segment can be established from Table 2. The LOCATION Indicator is the primary factor which determines overall risk, with the PRODUCT, VOLUME, and PROBABILITY OF FAILURE Indicators used to adjust to a higher or lower overall risk classification per the following table.

TABLE 2.—RISK CLASSIFICATION

Risk classification	Hazard location indicator	Product/volume indicator	Probability of failure indicator
A	L or M	L/L	L
B	Not A or C Risk Classification		
C	H	Any	Any

H=High, M=Moderate, and L=Low.
Note: For Location, Product, Volume, and Probability of Failure Indicators, see Tables 3, 4, 5, and 6.

TABLE 3.—LOCATION INDICATORS—PIPELINE SEGMENTS

Indicator	Population[1]	Environment[2]
H	Non-rural areas	
M		
L	Rural areas	

[1]The effects of potential vapor migration should be considered for pipeline segments transporting highly volatile or toxic products.
[2]We expect operators to use their best judgment in applying this factor.

Tables 4, 5 and 6 are used to establish the PRODUCT, VOLUME, and PROBABILITY OF FAILURE Indicators respectively, in Table 2. The PRODUCT Indicator is selected from Table 4 as H, M, or L based on the acute and chronic hazards associated with the product transported. The VOLUME Indicator is selected from Table 5 as H, M, or L based on the nominal diameter of the pipeline. The Probability of Failure Indicator is selected from Table 6.

TABLE 4.—PRODUCT INDICATORS

Indicator	Considerations	Product examples
H	(Highly volatile and flammable).	(Propane, butane, Natural Gas Liquid (NGL), ammonia).
	Highly toxic	(Benzene, high Hydrogen Sulfide content crude oils).
M	Flammable—flashpoint <100F.	(Gasoline, JP4, low flashpoint crude oils).
This section has been revised to include reference to ANSI/NFPA 59A in paragraph (a) as follows: L.	Non-flammable—flashpoint 100+F	(Diesel, fuel oil, kerosene, JP5, most crude oils).
	Highly volatile and non-flammable/non-toxic.	Carbon Dioxide.

Considerations: The degree of acute and chronic toxicity to humans, wildlife, and aquatic life; reactivity; and, volatility, flammability, and water solubility determine the Product Indicator. Comprehensive Environmental Response, Compensation and Liability Act Reportable Quantity values can be used as an indication of chronic toxicity. National Fire Protection Association health factors can be used for rating acute hazards.

TABLE 5.—VOLUME INDICATORS

Indicator	Line size
H	≥ 18"
M	10"-16" nominal diameters.
L	≤ 8" nominal diameter.

H=High, M=Moderate, and L=Low.

Table 6 is used to establish the PROBABILITY OF FAILURE Indicator used in Table 2. The "Probability of Failure" Indicator is selected from Table 6 as H or L.

TABLE 6.—PROBABILITY OF FAILURE INDICATORS (IN EACH HAZ. LOCATION)

Indicator	Failure history (time-dependent defects)[2]
H[1]	> Three spills in last 10 years.
L	≤ Three spills in last 10 years.

H=High and L=Low.

[1]Pipeline segments with greater than three product spills in the last 10 years should be reviewed for failure causes as described in subnote[2]. The pipeline operator should make an appropriate investigation and reach a decision based on sound engineering judgment, and be able to demonstrate the basis of the decision.
[2]Time-Dependent Defects are defects that result in spills due to corrosion, gouges, or problems developed during manufacture, construction or operation, etc.

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